CHAPTER I

EXECUTIVE SUMMARY

A DISASTROUS YEAR AND AN UNCERTAIN FUTURE FOR AVIATION

Even before the terrible events of September 11th, aviation was already in a weakened state and headed toward one of its worst years in over a decade. Domestic passenger demand began to decline in February while international traffic turned negative in July, largely in response to the slowing of the U.S. economy. Air carrier finances turned negative in the January-March quarter, due, in large part, to a combination of the collapse of high yield business traffic and rapidly escalating labor costs. Although the general aviation industry continued to report increased billings through the third quarter of the year, the industry also reported its first decline in aircraft shipments in nearly 7 years.

While the events of September 11th did negatively impact traffic and financial results in fiscal year (FY) 2001, by far the greatest impact is expected to occur during the fourth quarter of calendar year 2001 (the first quarter of FY 2002). Normally, the difference between calendar and fiscal year results and growth rates vary only slightly. However, there will be relatively large differences between the fiscal and calendar year growth rates reported in both 2001 and 2002. Therefore, where appropriate, statistics and growth rates for these 2 years will be noted on both a fiscal and calendar year basis.[1]

AN END OF THE BOOM TIMES: A REVIEW OF 2001

One of the longest running boom times in aviation history came to an abrupt halt in 2001. During the 7-year period between 1994 and 2000, the U.S. and world commercial and civil aviation community achieved unprecedented growth in both the demand for aviation services and profitability. While the terrorist events of September 11th are responsible for a large part of the declines witnessed in 2001, other factors,

[1] All stated years and quarters for U.S. economic and U.S. air carrier traffic, and financial data and forecasts are fiscal years (October 1 through September 30); all stated years and quarters for international economic and world traffic and financial data and forecasts are calendar years (CY), unless otherwise denoted.

most notably the slowdown in U.S. and world economic activity, had already set the stage for an end to the growth cycle. The events of September 11th were merely the catalyst that pushed aviation over the edge, turning an already bad year into a disastrous year.

UNITED STATES AND WORLD ECONOMIC ACTIVITY

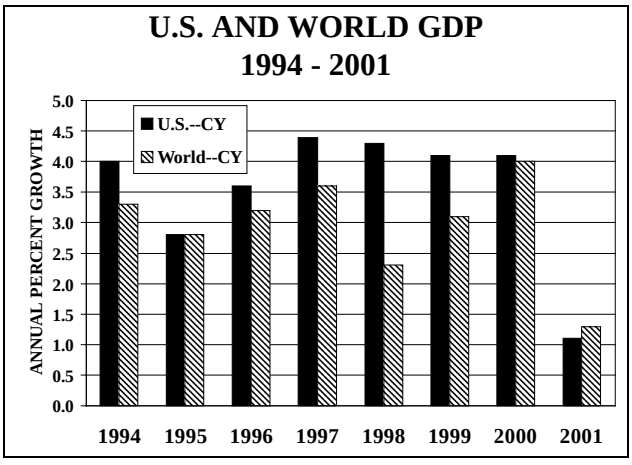
On November 26, the National Bureau of Economic Research officially announced that the U.S. economy had entered its 10th recession since the end of World War II in March. This ended the longest running economic expansion period (10 years) in U.S. history. The U.S. economy slowed considerably during the April-June quarter (up only 0.3 percent), but did not decline until the July-September quarter (down 1.1 percent). U.S. Gross Domestic Product (GDP) growth, which had averaged 3.3 percent during the 10-year expansion period, grew by only 1.8 percent in FY 2001--up an estimated 1.0 percent in CY 2001.

The current economic downturn appears to be the first attributable to financial markets since the 1930s. The collapse of the high-tech information industries and subsequent decline in market equity values, in effect, eroded much of the "wealth effect" that had previously generated a large part of the growth in the U.S. economy over the past several years. The loss of household wealth dampened consumer confidence and sharply reduced consumer spending. The September 11th attacks accelerated the downturn in consumer confidence and spending on consumer goods and services and, in particular, spending on air travel.

U.S. inflation (as measured by the consumer price index) averaged 3.2 percent in FY 2001. The relatively high inflation rate is due, in part, to a 5.6 percent increase in energy prices. Energy prices have risen almost 37.0 percent over the past 2 years.

Globally, economic gains have averaged about a half percentage point less (GDP up 2.8 percent) than those of the United States during the past economic expansion. World GDP growth also slowed considerably during 2001, averaging only an estimated 1.4 percent in CY 2001. The slowdown in 2001 is due, in large part, to the growing dependency of many world economies on export trade with the United States.

On a calendar year basis, the economies of Canada and Europe/Middle East/Africa are expected to grow slightly faster than the United States in 2001, expanding by 1.6 and 1.7 percent, respectively. The economies of the Latin American countries, although weakened by the financial crisis in Argentina (down 1.5 percent), is expected to increase by 1.9 percent in 2001. The economies of the Asian/Far East countries also weakened in 2001 (GDP up 1.1 percent), due, in large part, to the economic recession in Japan (GDP down 1.2 percent). However, Japan's weakness is partially offset by China's relatively strong economic activity (up 7.2 percent).



COMMERCIAL AVIATION

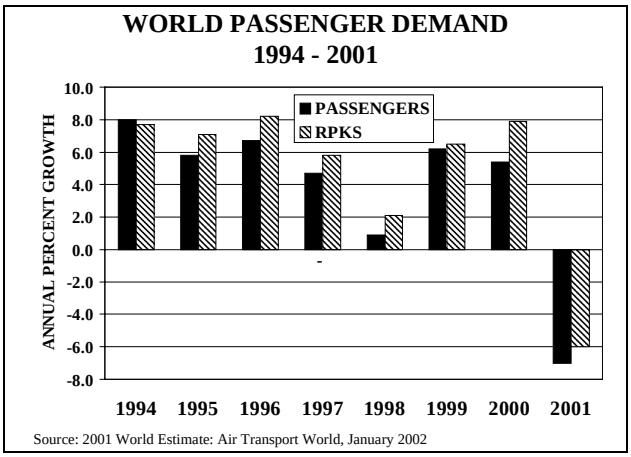
Although the terrorist events of September 11th were aimed mainly at the United States and, in

particular, its aviation industry, the repercussions were felt worldwide. Commercial passenger and cargo flights to and from the United States were halted for several days. In the aftermath of the attacks and the subsequent U.S. declaration of war against the terrorists responsible, the demand for air travel to and from the United States declined significantly, forcing both U.S. and foreign flag carriers to drastically cut scheduled flights. However, the impact was not confined to just U.S. markets, air travel demand and schedules were impacted worldwide.

World Travel Demand

The relatively strong growth in both U.S. and world GDP prior to 2001 was largely responsible for the strong demand for world aviation services exhibited since 1993. Worldwide passenger demand, as measured by revenue passenger kilometers (RPKs), expanded by an average of 6.4 percent over the 1994-2000 time period. During this same period, the number of passengers carried worldwide increased at an average annual rate of 5.4 percent, growing from 1.1 billion in 1993 to over 1.6 billion in 2000.

Traffic figures are not available for worldwide traffic in 2001. However, preliminary traffic figures from around the world suggest that the ripple effect from the events of September 11th will result in a decline in worldwide demand in 2001. Air Transport World estimates that world RPKs will decline by 8.0 percent while the number of passengers carried declines by 6.0 percent.[2] The International Air Transportation Association (IATA) estimates that worldwide traffic could decline in the neighborhood of 5.0 percent in 2001. Statistics from the Association of European Airlines (AEA) indicate a decline of 4.4 percent in RPKs for the period January through November. The Association of Asian Pacific Airlines (AAPA) reports a decline of 3.4 percent in RPKs (down 22.1 and 22.6 percent, respectively in October and November) for the 11 months ending November 2001.

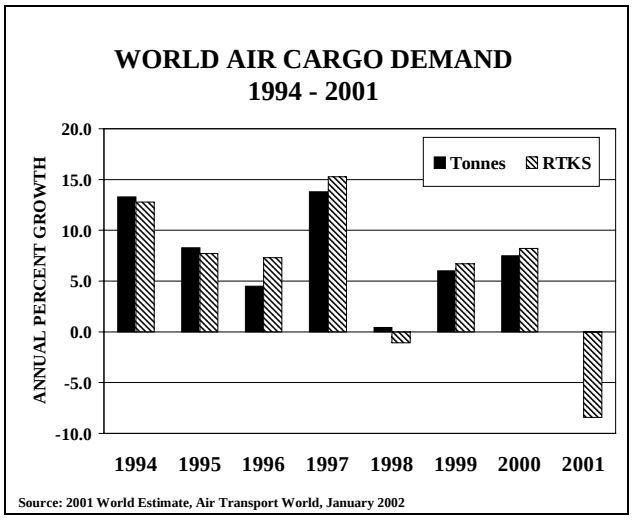


In CY 2001, it is estimated that U.S. and foreign flag carriers combined transported a total of 131.0 million passengers between the United States and the rest of the world, a decline of 6.9 percent from 2000. Passenger traffic volume is expected to decline in all four world travel regions in 2001: Atlantic markets, 47.9 million (down 9.6 percent); Latin American markets, 39.6 million (down 2.9 percent); Asia/Pacific markets, 24.1 million (down 7.3 percent); and Canadian transborder markets, 19.5 million (down 7.2 percent).

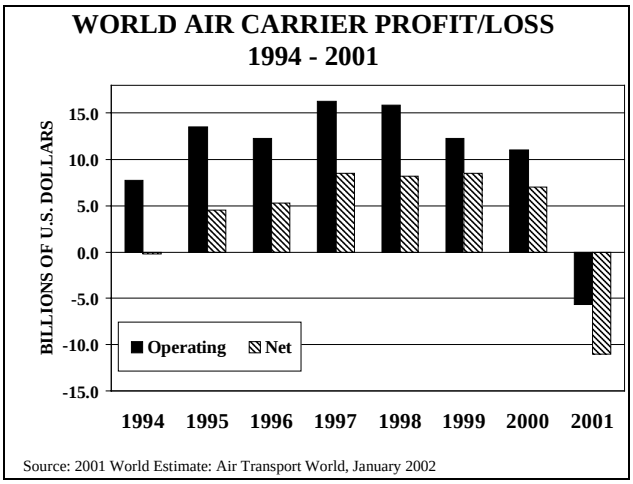
Prior to 2001, air cargo demand had grown at a faster pace than passenger demand, with worldwide freight tonnes growing at an average annual rate of 8.6 percent over the 1994-2000 period. During this same period, freight revenue ton kilometers (RTKs) grew at an annual rate of 8.0 percent. However, a slowing in U.S. economic activity and imports from key world regions, combined with the collapse of the high-tech industry and the demand for information technology equipment, appears to have resulted in significant declines in the demand for air cargo services worldwide. Air Transport World estimates that RTKs will decline by 8.4 percent

[2] *Air Transport World*, January 2002.

in 2001.[3] AEA statistics indicate a decline of 5.1 percent in RTKs for the 11 months ending November 2001. AAPA reports a decline of 5.8 percent in RTKs for the 11 months ending November 2001.

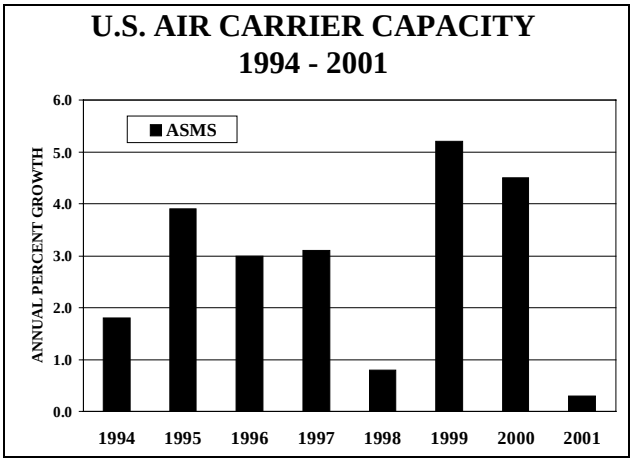


Expanding U.S. and world economic growth, combined with the strong demand for both passenger and air cargo services, also resulted in record profits for world airlines. Based on data compiled by the International Civil Aviation Organization (ICAO), world air carriers (including U.S. airlines) reported cumulative operating profits totaling $89.0 billion over the 7-year period ending in 2000. Net profits totaled almost $42.0 billion over the same time period. The events of September 11th have almost certainly guaranteed that the industry will report record operating and net losses in 2001. Preliminary estimates by Air Transport World indicate that worldwide operating and net losses could total $5.8 and $11.0 billion in 2001.



U.S. Travel Demand

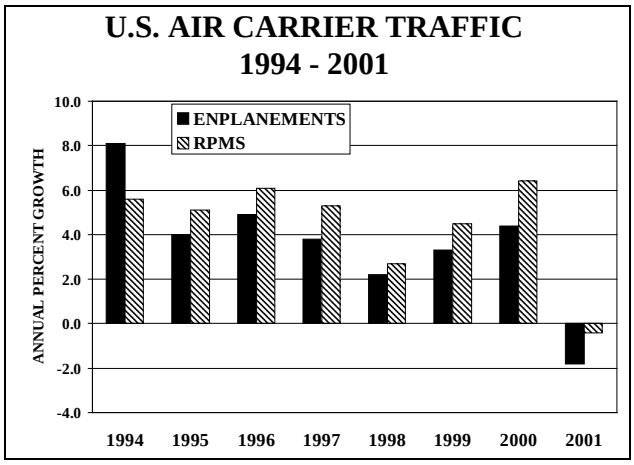
U.S. air carrier (sum of large air carriers and regionals/commuters) system capacity (domestic plus international), as measured by available seat miles (ASMs), increased by 1.3 percent in FY 2001, after growing at an average annual rate of 3.0 percent during the 1994-2000 period. On a calendar year basis, ASMs are estimated to decline 3.1 percent in 2001.



U.S. air carrier system traffic, as measured by revenue passenger miles (RPMs), grew at an annual rate of 5.1 during the 1994-2000 period. During this same 7-year period, the number of passengers enplaned on U.S. airlines increased at an average annual rate of 4.4 percent, growing from 515.6 million in FY 1993 to 695.3 million in 2000. However, both RPMs and

[3] *Air Transport World*, January 2002

enplanements declined in FY 2001, down 0.4 and 1.8 percent, respectively. On a calendar year basis, RPMs and enplanements are estimated to decline 5.9 and 7.0 percent, respectively, in 2001.



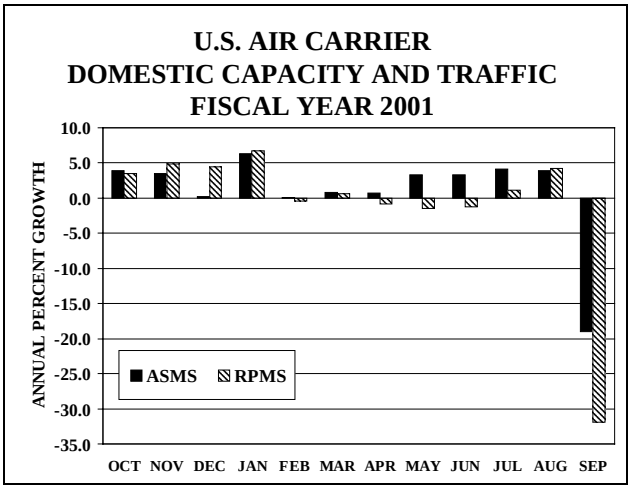
U.S. air carriers achieved a load factor of 70.6 percent in 2001, a decline of 1.3 percentage points from the all-time high of 71.9 percent recorded in 2000. However, this is still considerably higher than the load factor of 62.6 percent achieved in 1993.

Large Air Carriers

In FY 2001, the large U.S. air carriers' system ASMs (the sum of domestic and international services) increased by 1.5 percent while passenger demand (RPMs and enplanements) declined 0.4 and 1.6 percent, respectively. As a result of faster capacity growth relative to the decline in traffic, the system-wide load factor declined 1.3 percentage points to 70.9 percent.

September was a disastrous month for U.S. airlines, both domestically and internationally, wiping out most of the gains recorded during the previous 11 months. Domestic capacity (50 states, Puerto Rico, and the U.S. Virgin Islands) was down 19.0 percent in September but up 0.9 percent for the entire year. On a calendar year basis, domestic ASMs are predicted to decline 3.2 percent in 2001.

September was even worse in terms of passenger traffic. Domestic RPMs were down 31.9 percent while passenger enplanements fell 33.7 percent. For the entire year, domestic RPMs and enplanements declined 0.8 and 1.8 percent, respectively, in 2001. On a calendar year basis, domestic RPMs and enplanements are estimated to decline by 6.0 and 7.2 percent, respectively.

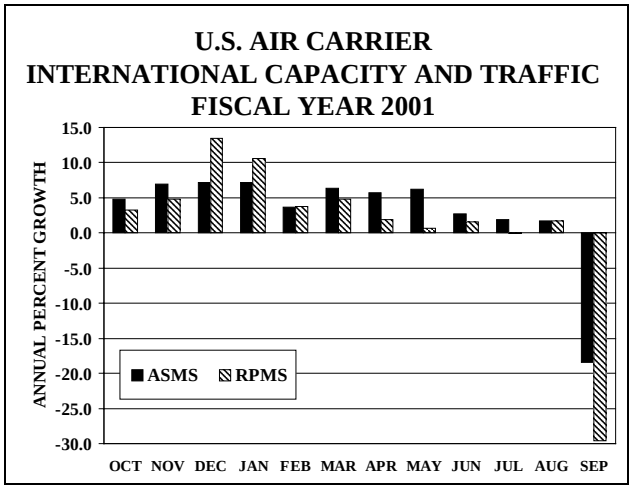


Domestic load factor fell 10.6 percentage points in September to 55.7 percent. For the entire year, domestic load factor averaged 69.7 percent, a decline of 1.2 percentage points from 2000. On a calendar year basis, domestic load factor is expected to average 69.0 percent in 2001.

International ASMs were up 3.0 percent in 2001, despite a decline of 16.4 percent in September. Capacity increased in all three world travel regions in 2001--up 3.2 percent in Latin American and Pacific markets and up 2.7 percent in Atlantic markets. On a calendar year basis, international capacity is expected to decline 2.9 percent in 2001.

International RPMs fell 29.6 percent in September but were up 0.8 percent for the entire year. RPMs were up 3.4 and 1.8 percent, respectively, in Latin American and Pacific markets, but declined 1.0 percent in Atlantic markets. On a calendar year basis, international

RPMs are predicted to decline 7.1 percent in 2001.

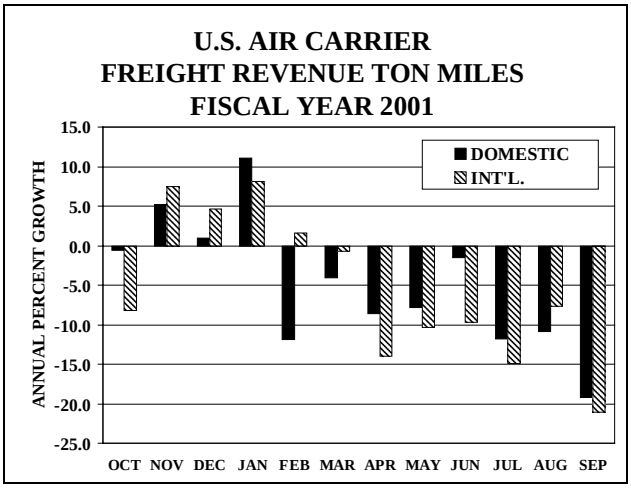


International passenger enplanements grew by only 0.4 percent in 2001, due largely to a 28.1 percent decline in September. In 2001, enplanements to Latin American and Pacific markets grew by 2.2 and 1.6 percent, respectively, while Atlantic market enplanements fell 2.1 percent. On a calendar year basis, international enplanements are expected to decline 6.4 percent in 2001.

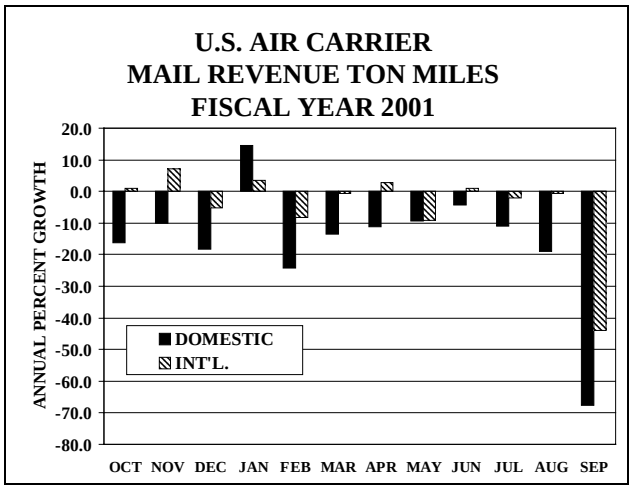
International load factors averaged 66.1 percent in September, a decline of 12.5 percentage points from the previous year. For the entire year, international load factors averaged 74.4 percent, a decline of 1.6 percentage points from the all-time high of 76.0 percent achieved in 2000. On a calendar year basis, load factors are forecast to average 72.7 percent in 2001.

U.S. air carriers' air cargo traffic declined 5.3 percent in 2001, with domestic RTMs down 5.2 percent and international RTMs down 5.4 percent. U.S. cargo activity had been in decline for most of the year and may, in fact, have been one of the leading indicators of the current economic recession. Some industry analysts blame the downturn in air cargo demand on the recent collapse in investment in the high-tech and telecom industries. Their collapse resulted in large declines in the demand for information technology equipment which, for the most part, are shipped by air.

Domestic freight/express RTMs declined 3.1 percent while international freight/express was down 5.4 percent from 2000 levels. While some of the loss can be attributed to the September 11th attacks (domestic and international RTMs down 10.2 and 30.6 percent, respectively, in September), airfreight demand had incurred declines throughout much of the year.



In 2001, domestic and international mail RTMs decreased 15.2 and 4.7 percent, respectively. The large decline in domestic mail was due in part to efforts by the U.S. Postal Service to shift the delivery of mail from air to ground for distances of up to 1,000 miles. In September, mail RTMs declined significantly with domestic RTMs down 67.6 percent and international mail RTMs down 45.1 percent.

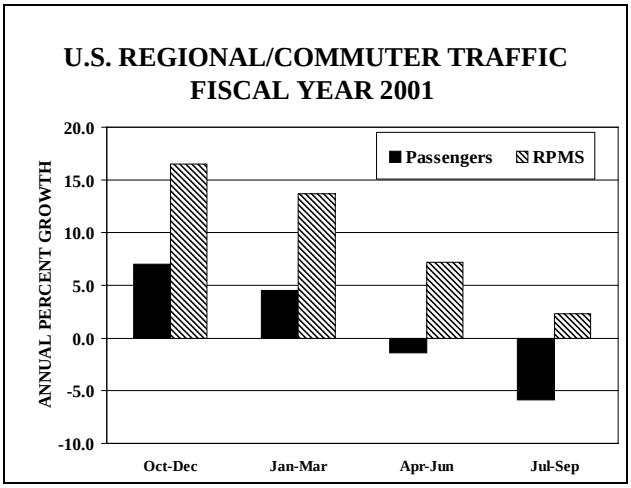


In the aftermath of the September 11th attacks, the FAA issued a new security directive to strengthen security standards for transporting cargo on passenger flights. This directive will have a significant impact on air cargo activity in the future.

Regionals/Commuters

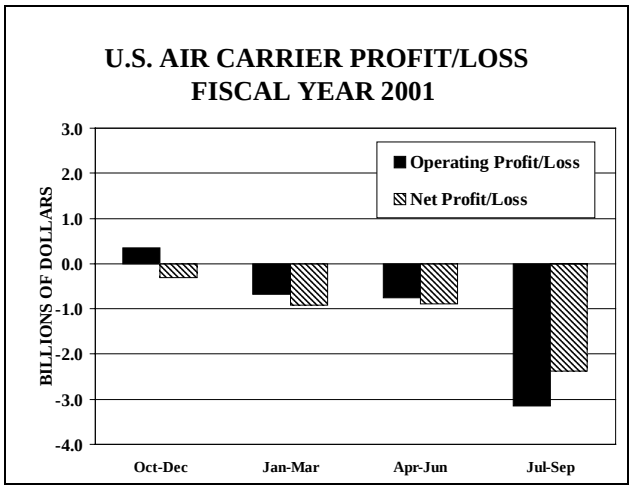
Despite the events of September 11th and a lengthy 98-day strike (March 26-July 1) that shut down operations at Comair, regional/commuter capacity and traffic continued to grow in 2001. Capacity (ASMs) grew by 9.0 percent while RPMs increased by 9.5 percent. The regionals/ commuters achieved a load factor of 58.6 percent in 2001, up 0.3 percentage points over the 2000 load factor. On a calendar year basis, it is estimated that regional/commuter ASMs and RPMs grew by 6.7 and 5.8 percent, respectively, in 2001.

Regionals/commuters enplaned a total of 79.7 million passengers in FY 2001, an increase of only 0.8 percent over 2000. The large disparity in growth relative to passenger miles is due to an increase of 23.9 miles in the passenger trip length. This large increase in passenger trip length is due not only to the increased numbers of regional jets in the fleet, but also to the fact that the larger airlines continued to transfer many medium to short-haul routes to their regional partners. On a calendar year basis, it is estimated that regional/commuter passengers will decline by 2.3 percent in 2001.

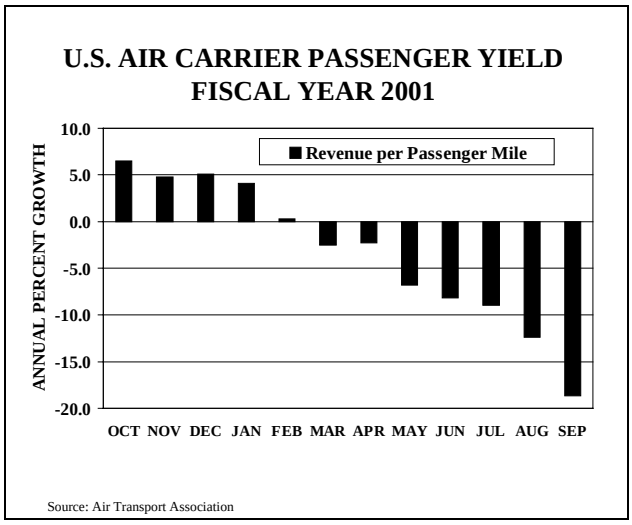


U.S. Air Carrier Financial Results

Prior to the January-March quarter, commercial air carriers had strung together 24 consecutive profitable quarters—1st quarter 1995 to 4th quarter 2000. During the previous 7 years (1994-2000), U.S. air carriers reported cumulative operating and net profits that totaled $47.6 and 23.6 billion, respectively. This all came to an abrupt halt when the industry reported operating and net losses in each of the last 3 quarters of FY 2001 (January-September), culminating in an operating loss of $3.2 billion in the July-September quarter. For the entire year, the industry incurred operating and net losses totaling $4.3 and $4.4 billion, respectively. This represents a deterioration of $12.2 billion in operating profits and $7.9 billion in net profits from 2000. Losses in 2001 would have been higher had not the Federal government approved a $5.0 billion emergency aid package for U.S. airlines, which is included in most air carrier's financial statements for the July-September quarter.



Operating revenues were down 2.7 percent in 2001, due, in part, to the traffic losses incurred as a result of the terrorist attacks of September 11th. However, the losses incurred prior to September were the direct result of a weakening U.S. economy and the loss of the higher fare business traveler. The shift in the mix of traffic from business to personal/pleasure travel resulted in unprecedented and devastating declines in passenger yields.



On the other hand, operating expenses were up 7.3 percent in FY 2001, due to a combination of increased fuel and labor costs.

In 2001, only 5 of the 15 majors[4] reported a profit, with operating and net losses for the group totaling $4.2 and $4.2 billion, respectively. Operating results for the majors ranged from a profit of $844.3 million (Southwest) to a loss of $3.0 billion (United). The three cargo carriers reported combined operating profits of $567.2 million while the 12 passenger airlines reported combined operating losses of almost $4.8 billion. Four carriers--American, Northwest, United and US Airways--accounted for nearly all of the passenger carriers' total losses.

The financial results of many of the smaller nationals[5] and regionals[6] also worsened in 2001, with 26 of the 52 reporting carriers incurring operating losses. The combined group of nationals and regionals reported an operating loss of $96.5 million in 2001, with earnings ranging from an operating profit of $98.3 million (Continental Micronesia) to an operating loss of nearly $107 million (Comair).

Although the record among the low-cost, low-fare, new entrant carriers was mixed in 2001, several of the stronger carriers reported profitable operations in 2001. The combined operating profits of AirTran, Frontier, and JetBlue, totaled over $150 million.

Generally, it is believed that the infusion of $5.0 billion in federal emergency funds averted a number of other bankruptcy filings. The Air Transport Association estimated that its members went through $4.7 billion in cash between September 11 and September 30 ($340 million per day during the 4-day shutdown and $210 million on each of the 16 days thereafter). Despite capacity reductions of 20 percent immediately following the events of September 11th, most airlines were unable to cut costs as quickly or as deeply as the revenue impact from the lost traffic.

[4] Defined by the U.S. DOT as carriers with annual operating revenues greater than $1 billion.

[5] Defined by the U.S. DOT as carriers with annual operating revenues between $100 million and $1 billion.

[6] Defined by the U.S. DOT as carriers with annual operating revenues less than $100 million.

The regional/commuter airline industry posted an operating loss of $347.1 million in 2001, a deterioration of $977.5 million less from the $630.4 million profit recorded in 2000. The nine Form 41 carriers (operating at least one aircraft with more than 60 seats) reported operating losses totaling $269.9 million while 77 Form 298-C carriers (operating only aircraft with 60 seats or less) posted losses of $77.2 million. The losses reflect both the impact of the Comair strike as well as the events of September 11th.

U.S. Commercial Air Carrier Fleets

In the aftermath of the terrorist attacks, many of the larger airlines grounded large numbers of older less efficient aircraft and deferred delivery of many of the new aircraft scheduled for delivery over the next several years. As such, the number of commercial aircraft in the U.S. commercial fleet (including regionals/ commuters) is estimated to decline by a total of 269 aircraft in CY 2001. Most of the decline is occurs among the larger air carrier jet fleet (over 70 seats), which falls by 413 aircraft to a total of 4,069 in 2001. The cargo large jet fleet declines by 15 aircraft in 2001, from 1,054 to 1,039 aircraft. Only the regional/commuter fleet increases in 2001, up 159 aircraft to a total of 2,427. However, the regional/commuter turboprop fleet falls by 31 aircraft in 2001.

Orders for commercial jet aircraft totaled only 851 during the first 3 quarters of 2001, a 40.6 percent decline from the same period in 2000.[7] The smaller regional jets (37 to 70 seats) accounted for 38.7 percent of the orders (329 aircraft) during 2001, a 50.1 percent decline from the 659 aircraft ordered during the first 9 months of 2000. Although regional jet orders were down from the previous year, the 2,301 orders over the past 19 quarters show that this will continue to be the fastest growing segments of the industry over the next several years.

A total of 865 commercial jet aircraft were delivered during the first 3 quarters of 2001, a 9.8 percent increase over the same period in 2000. This included delivery of 249 regional jets, a 14.2 percent increase over deliveries during the same period in 2000.

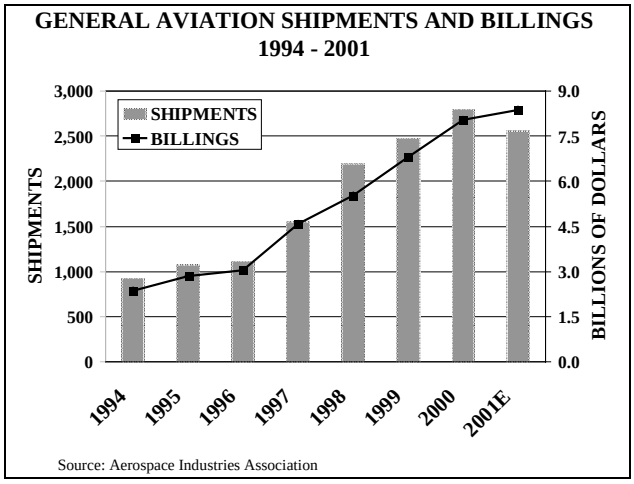
GENERAL AVIATION

The turnaround in the general aviation industry that began with the passage of the General Aviation Revitalization Act in 1994 appears to have slowed considerably in 2001. While the slowdown in U.S. economic activity can be partially blamed for the slowing of demand for general aviation products and services, the events of September 11th and their aftermath are expected to have the greatest and longest impact on the general aviation industry. Many of the "no-fly zone" and other restrictions placed on the operation of general aviation aircraft immediately after the terrorist attacks remain in effect today, closing many airports to VFR flying and idling thousands of general aviation aircraft.

The slowing demand for general aviation products was confirmed when the General Aviation Manufacturers Association (GAMA) released its report on the industry's 3rd quarter billings and shipments. The report showed that aircraft shipments were down 13.4 percent for the 3rd quarter and 6.2 percent year-to-date. Billings were still running slightly ahead of 2000, thanks in large part to the continued strong market for the higher priced jet aircraft. Based on projections by the Aerospace Industries Association of America (AIAA), general aviation aircraft shipments are expected to decline for the first time since 1994 (down

[7] Boeing announced commercial aircraft orders totaling 335 in calendar year 2001, a decline of 45 percent from 608 in 2000. (*Aviation Daily*, January 10, 2002)

8.8 percent to 2,556). AIAA projects that industry billings will increase 4.0 percent to $8.4 billion in 2001, a new all-time high.[8]



General aviation activity counts at FAA air traffic facilities were down significantly during most of 2001. Operations at combined FAA and contract towers were down 5.7 percent, with itinerant operations down 6.2 percent and local operations down 5.0 percent from 2000 activity levels. In September, general aviation activity at FAA combined towers fell 28.1 percent.

The number of general aviation IFR aircraft handled at FAA en route centers also declined during most of 2001. For the year as a whole, en route center activity was down 7.2 percent, down 24.4 percent in the month of September. Despite recording negative counts for much of the year, the restrictions placed on VFR flying resulted in an increase in general aviation en route activity during the last 2 weeks of September.

The FAA's 2000 General Aviation and Air Taxi Activity and Avionics Survey also reported declining general aviation activity levels. The general aviation active fleet and hours flown declined 0.9 and 2.5 percent, respectively in 2000, the first reported declines after 5 consecutive years of reported growth. Based on the results of the 2000 Survey, the active general aviation fleet totaled 217,533 and flew an estimated 31.0 million hours. Based on reported general aviation activity counts at FAA air traffic facilities in 2001, the active fleet and hours flown are forecast to decline an additional 0.6 and 6.4 percent, respectively, in 2001. Most of the decline is expected to occur among the piston aircraft fleet and is due, in part, to the impact of the September 11th attacks.

The one bright spot for general aviation is in the business/corporate segment of the industry where increased growth in fractional ownership companies and corporate flying has continued to expand the market for jet aircraft. Although shipments of jet aircraft also declined during the 3rd quarter (from 145 to 133 aircraft), the fallout from September appears to have spurred the interest in fractional or corporate aircraft ownership. It also appears to have provided new growth opportunities for the on-demand charter industry.

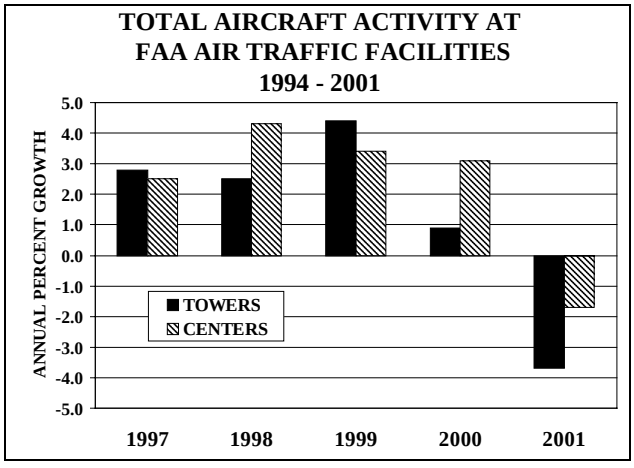
Except for business/corporate flying, most of the statistics relating to general aviation activity are discouraging. The number of student pilots, key to the future of general aviation, declined by 6.6 percent in 2001, the 3rd consecutive year of decline. In addition, restrictions were placed on flight schools and student pilot training in the aftermath of September 11th, particularly with regard to foreign students. The industry, over the past several years, instituted a number of industry-wide programs, which are designed to attract new pilots to general aviation. Support for the programs appear to be waning among some segments of the industry, especially as contributions for these programs compete with other programs during periods of declining demand and reduced budgets. The future direction of the general aviation industry will depend, in large part, on how successful the industry is in continuing to rebuild and stimulate new interest in these programs.

[8] *2001 Year-end Review and 2002 Forecast—An Analysis*, Aerospace Industries Association of America, December 2001.

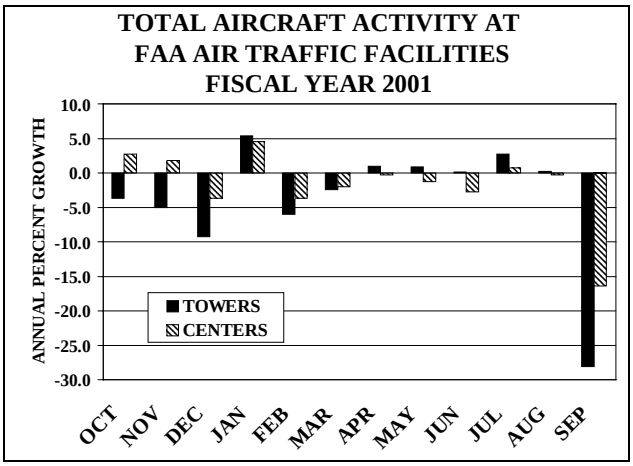
FAA WORKLOAD

An expanding U.S. economy, in combination with strong demand for both the commercial and general aviation services, significantly expanded the demand for services at FAA air traffic facilities during the 1997-2000 time period—up 2.6 percent a year at combined FAA and contract towers and 3.3 percent at en route centers. It is this growth that gave rise to the delays that plagued aviation at many U.S. commercial airports in 2000 and 2001. However, delays ceased to be a major problem on September 11th. Activity at combined FAA and contract towered airports and en route centers were down 28.1 and 16.4 percent, respectively, in September.

Notwithstanding the terrorist acts, a slowing U.S. economy, combined with weakening demand in both the commercial and civil aviation sectors, had already slowed activity growth at FAA facilities. During 2001, total activity at combined FAA and contract tower airports (66.2 million), including instrument activity (50.9 million), declined by 3.7 percent. The number of IFR aircraft operations at en route centers (45.2 million) was down 1.7 percent.



Most of the pre-September 11th decline in activity occurred among general aviation aircraft—down 2.9 percent during the first 11 months of the FY 2001 and 5.7 percent for the entire year. Commercial activity also slowed during 2001 but most of the weakness occurred among the larger air carriers. Commuter/air taxi activity continued to exhibit sustained growth throughout most of the year.



Following the terrorist attacks and the shutdown of the entire FAA air traffic control system for several days, a number of restrictions were placed on the operation of aircraft in and around the New York and Washington area airports, as well as in other security areas around the country. These restrictions, in effect, banned the operation of all VFR flights in these areas, forcing most potential flights to file flight plans and fly by IFR. One of the results of the new restrictions has been an increase in general aviation activity at en route centers.

The number of traditional (non-automated) services provided at FAA Flight Service Stations (FSS) totaled 29.0 million in 2001, a 4.9 percent decline from 2000 levels. All categories of flight services declined in 2001: pilot briefings, down 4.4 percent; flight plans originated, down 4.7 percent; and aircraft contacted, down 8.0 percent.

FAA
AEROSPACE FORECASTS
FISCAL YEARS 2002 - 2013

The challenges in developing this year's aviation forecasts have been numerous, especially for predicting aviation demand over the next several years. Nothing in the past has prepared aviation forecasters to predict the future direction of aviation demand with any degree of certainty. Nevertheless, the FAA has developed a set of assumptions and forecasts that we believe to be consistent with the trends we have witnessed in the days, weeks, and months following the September 11th terrorist attacks.

This year's aviation forecasts and assumptions have been developed around three distinct time periods. Each period is defined by the type and scope of activity it contains. While strategies and levels of success may differ, forecasts and assumptions have been developed for each of the three major user groups—air carriers, regionals/commuters, and general aviation—based on these three time periods. The three time periods are as follows:

Fiscal Year 2002—This is basically a period of contraction as each of the user groups attempts to redefine itself in light of the new post- September 11th operating environment and declining U.S. and world economic activity. It is a period of characterized by downsizing and cost cutting, during which each user group attempts to bring its costs in line with significantly reduced levels of demand for aviation products and services. It is also a period of minor adjustments to supply as each user group responds to improvements in the outlook for its products and services during the second half of the year.

Fiscal Year 2003—During this period, both the U.S. and world economies are at the acme of a very strong economic recovery, which, in turn, increases the demand for aviation products and services. Having attained some level of equilibrium between expenses and revenues, it is also during this time that each user group begins to develop strategies to not only take advantage of current demand levels but to also assure sustained long-term growth and profitability.

Fiscal Years 2004 – 2013—This period is distinguished by a return to more normal levels of growth in the demand for aviation products and services. This does not imply a return to previous levels of demand, only that growth in aviation demand over this 10-year period should approximate previous long-term growth rates.

The first and foremost assumption in this year's forecasts is that there will be no further successful terrorist incidents against U.S. aviation and that the public confidence in the safety of the U.S. aviation system is restored. FAA economists studied and analyzed the impacts of and passenger reactions to previous terrorist incidents and have, where appropriate, assumed similar trends in modeling the expected strength and duration of the recovery period from the September 11th attacks.

It was decided early on that it would be impossible to use current econometric models to predict aviation demand for the next several years—2002 and 2003. However, a major assumption in this year's forecasts is that the long-term relationships inherent in the current forecast models have not changed substantially. Therefore, the forecasts for the years 2004 to 2013 have been derived from the growth rates predicted by the current forecast models.

The starting point for the commercial aviation forecasts (air carriers and regionals/commuters) was the one-year out schedules published in the Official Airline Guide (OAG). FAA forecasters have had access to four updates of the 12-month schedules—beginning with the October 2001 schedule and ending with the January 2002 schedule. Each update was compared with previously published schedules to determine the accuracy of the published schedule relative to what was actually being flown by the carriers. As a

general rule, it was assumed that the 3 to 6-month out schedules were fairly accurate. Beyond the 3 to 6-month period, adjustments were made based on discussions with schedule planners and/or forecast staff at individual airlines. The use of monthly schedules has allowed FAA forecasters to develop forecasts on either a monthly (large air carrier) or quarterly (regionals/commuters) basis for the years 2002 and 2003.

Generally, the lag in obtaining usable actual data (3-4 months on average) would have been a major obstacle to assessing the near-term impact of the events of September 11th on passenger demand. Thanks to the staff at the Air Transportation Association (ATA), the FAA was able to obtain, on a next-day basis, daily traffic results as reported by its member airlines. Additionally, FAA economists were able to access internal FAA daily operation counts, also on a next-day basis, for the 22 en route centers and 55 select airports. These databases were immensely helpful in assessing post-September 11th traffic and aircraft activity trends.

In addition to the OAG and ATA data, FAA forecasters also scoured aviation publications and web sites to obtain as much post-September 11th actual traffic and operational data as possible. Numerous discussions were held with individual carriers, aircraft and engine manufacturers, aviation associations, and other industry experts to obtain their insight into current trends. As a final step in finalizing this year's forecast, the forecasts and assumptions were presented to numerous industry staff and aviation associations who were asked to comment on the reasonableness of the forecasts. Their comments have been incorporated into the forecasts that are contained herein.

The assumptions used in predicting demand for the various user groups are discussed in great detail in the respective chapters that follow.

ECONOMIC FORECASTS

The economic forecasts used by the FAA to project domestic aviation demand are provided by the Executive Office of the President, Office of Management and Budget (OMB). In addition to the OMB forecasts, the FAA uses the U.S. macro economic projections of the Congressional Budget Office (CBO) as well as those of DRI-WEFA, Inc., a commercial forecasting service. The alternative forecasts provide the FAA with a range of economic forecasts with which to gauge the risk associated with variations from the OMB projections. The FAA uses the world and individual country economic projections provided by DRI-WEFA to forecast the demand for international aviation services.

In any given year there are likely to be variations around the long-term trend. None of the current economic models used by the FAA are sufficiently precise to predict interim business cycles. In addition, unanticipated developments, such as the 1997-98 Southeast Asia financial crisis, the 1998 Northwest Airlines' strike, or the September 11th terrorist attacks cannot be predicted.

The projected growth of aviation demand discussed in this and subsequent chapters is consistent with the national short- and long-term economic growth forecasts discussed in greater detail in Chapter II of the hard-copy version of the forecast document. Web Table I-1 summarizes the key U.S. and world economic assumptions used in developing the domestic and international aviation demand forecasts. Annual historical data and economic forecasts are presented in tabular form in web Tables 1 through 5.

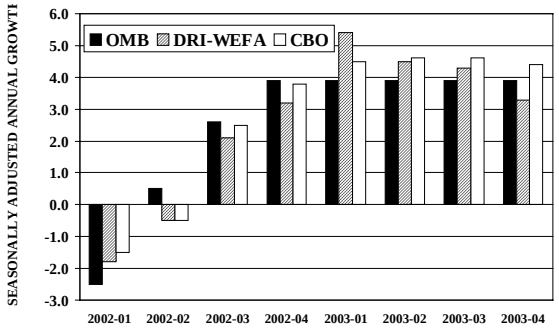
United States Economy

While there is basic agreement among the three economic projections used by the FAA as to the general direction of the U.S. economy—a recession followed by a strong recovery beginning in 2002—there is disagreement regarding the length and depth of the recession. There are also significant differences with regard to future energy prices, particularly in 2002.

The OMB economic forecasts anticipate a deep 2-quarter recession (declining by 2.5 percent[9] in the October-December 2001 quarter), ending during the January-March 2002 quarter (GDP up 0.5 percent). The economy then picks up steam throughout the remainder of the year, growing at annual rates of 2.6 and 3.9 percent, respectively, over the last 2 quarters of the fiscal year.

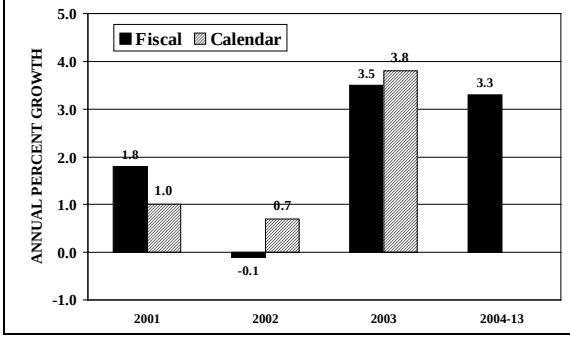
On the other hand, CBO and DRI-WEFA both forecast a 3-quarter recession, ending during the April-June quarter. Both CBO and DRI-WEFA assume a milder recession than OMB. The CBO forecast has the economy declining at rates of 1.5 and 0.5 percent, respectively, during the first 2 quarters of FY 2002. DRI-WEFA assumes that the economy will decline by 1.7 and 0.5 percent, respectively, during the same time period. However, DRI-WEFA's recovery is significantly weaker than either OMB or CBO. The CBO forecasts growth of 2.5 and 3.8 percent, respectively, over the last 2 quarters of the fiscal year. DRI-WEFA assumes growth of only 2.1 and 3.2 percent, respectively, over the same period.

U.S. GROSS DOMESTIC PRODUCT
FY 2002 AND 2003 BY QUARTER



On an annual basis, OMB projects U.S. real GDP to decline by 0.1 percent in FY 2002, then grow by 3.5 and 3.8 percent, respectively, in 2003 and 2004. Thereafter, U.S. economic activity is expected to expand at an average annual rate of 3.2 percent over the remainder of the forecast period.

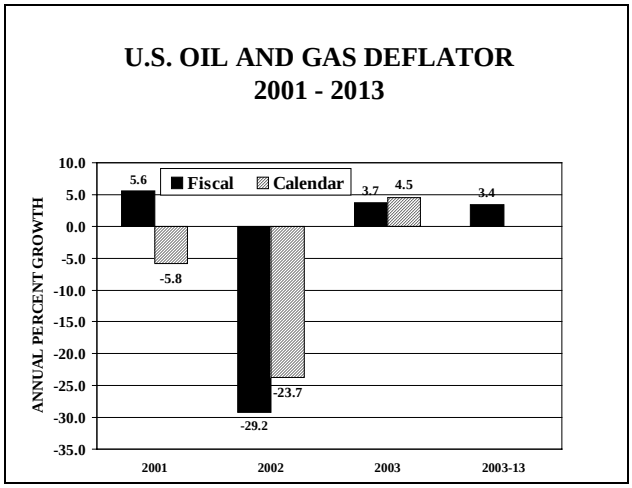
U.S. GROSS DOMESTIC PRODUCT
2001 - 2013



OMB projects that energy prices (as measured by the oil and gas deflator), which were up 29.6 percent in 2000 and 5.6 percent in 2001, will decline by 29.2 percent in 2002, then increase at an average annual rate of 3.4 percent over the remainder of forecast period. Both CBO and DRI-WEFA forecast significantly smaller declines of 10.7 and 13.6 percent, respectively, in 2002. However, CBO and DRI-WEFA expect oil prices to increase at average annual rates of only 2.5 and 2.3 percent, respectively, over the remaining 11 years of the

[9] Quarterly growth is expressed in seasonably adjusted annual rates.

forecast period. No major disruptions in the price or availability of oil have been assumed during the 12-year forecast period.



OMB projects that changes in consumer prices (as measured by the Consumer Price Index) will remain at relatively low rates throughout the forecast period, averaging 2.3 percent annually. CBO and DRI-WEFA assume average annual rates of 2.4 and 2.7 percent, respectively, over the 12-year forecast period.

World Economy

Worldwide economic growth is expected to remain sluggish in 2002 (up 1.8 percent), then expand by 3.8 and 3.5 percent, respectively, in 2003 and 2004. Over the entire 12-year forecast period, worldwide economic growth is expected to exceed that of the United States by approximately 0.3 percentage points annually, increasing at an average annual rate of 3.3 percent. Economic growth is forecast to be greatest in the Asia/Pacific and Latin America regions, expanding at annual rates of 4.1 and 3.9 percent, respectively. Economic growth in the Europe/Africa/Middle East countries and Canada are expected to average 2.7 and 2.8 percent, respectively, over the forecast period.

AVIATION TRAFFIC AND ACTIVITY FORECASTS

The large commercial air carrier traffic and activity forecasts are summarized in web Table I-2 and the forecast assumptions in web Table I-3. A detailed discussion of the forecasts and underlying assumptions can be found in Chapter III of the hard-copy version of the forecast document. Year-to-year historical data and forecasts can be found in web Tables 6 through 15, 19, 21 and 22.

The regional/commuter forecasts and assumptions are summarized in web Table I-4. A detailed discussion of the forecasts and assumptions can be found in Chapter IV of the hard-copy version of the forecast document. Year-to-year historical and forecast data can be found in web Tables 23 through 26.

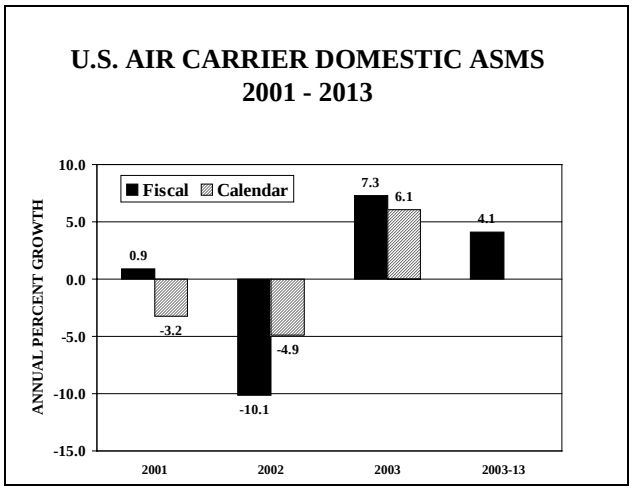
Air cargo forecasts are summarized in web Table I-5. A detailed discussion of the forecasts and assumptions can be found in Chapter III (pages III-46 to III-54) of the hard-copy version of the forecast document. Year-to-year historical and forecast data can be found in web Tables 16 through 18 and 20.

The general aviation forecasts are summarized in web Table I-5. Detailed discussions of the forecasts and assumptions can be found in Chapter V of the hard-copy version of the forecast document. Year-to-year historical data and forecasts can be found in web Tables 27 through 31.

Commercial Aviation

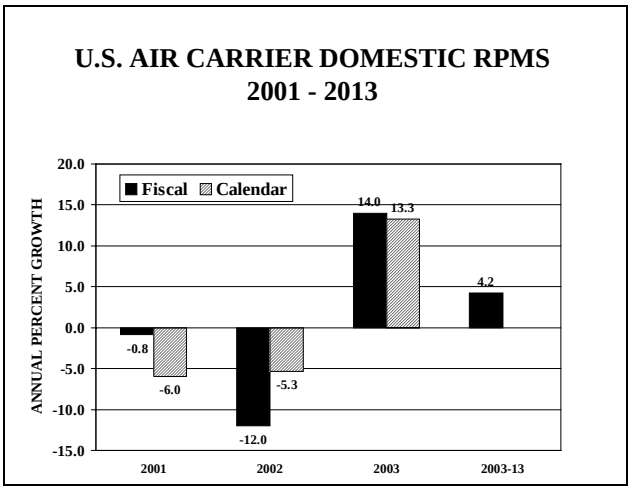
Domestic Air Carrier Passenger Traffic

In the aftermath of the September 11th terrorist attack, U.S. air carriers immediately reduced domestic capacity by approximately 20 percent across the board. It is assumed that domestic capacity will gradually return to the pre-September 11th capacity levels over a 3-year period. Domestic capacity is forecast to decline by 10.1 percent in 2002, then increase by 7.3 percent in 2003 and 4.6 percent in 2004. Thereafter, capacity is expected to increase at an average annual rate of 4.1 percent over the final 9 years of the forecast period.



Domestic air carrier RPMs and passenger enplanements are forecast to increase at average annual rates of 3.5 and 3.1 percent, respectively, over the 12-year forecast period. Domestic RPMs and enplanements are forecast to decline by 12.0 and 13.4 percent, respectively, in 2002, then grow by 14.0 and 14.8 percent, respectively, in 2003. U.S. carriers are expected to return to normal growth trends beginning in 2004, with RPMs and enplanements averaging 4.2 and 3.8 percent, respectively, over the remainder of the forecast period.

After declining for 2 consecutive years (to 68.2 percent in 2002), domestic load factors are expected to increase to 72.5 percent in both 2003 and 2004. Load factors are then expected to increase gradually over the remainder of the forecast period, averaging 73.2 percent in 2013.



Domestic passenger yields, which declined by 3.5 percent in 2001, are expected to decline an additional 3.4 percent in 2002. Yields are forecast to increase by 7.9 percent in 2003 and then grow at an average annual rate of 1.2 percent (down 1.2 percent in real terms) over the remaining 10 years of the forecast period. The relatively large increase in 2003 is due, in large part, to anticipated strong demand from both leisure and business travelers such that the resultant traffic mix more closely approximates the levels achieved prior to the start of the 2001 recession.

The decline in real yields over the latter years of the forecast is based on the assumption that competitive pressures will continue to exert pressure on carriers to hold the line on fare increases. Competition in domestic markets will come from established low-fare carriers such as Southwest, as well as from smaller low-cost carriers such as AirTran, Frontier, and JetBlue.

Air carrier aircraft operations are forecast to decline by 10.8 percent in 2002 then increase by 7.8 percent in 2003. Thereafter, air carrier

operations are forecast to grow at an average annual rate of 2.6 percent over the remaining 10 years of the forecast period. However, air carrier operations are not expected to return to pre-September 11th activity levels until 2005. The slower growth in activity at FAA air traffic facilities relative to expected traffic increases (1.8 versus 3.1 percent growth in domestic enplanements) reflects increased efficiencies in three operational measures. The domestic average aircraft size is forecast to increase 0.8 seats annually, from 136.5 seats in 2001 to 146.0 seats in 2013. The average domestic passenger trip length increases from 839.3 to 883.3 miles over the 12-year forecast period, an increase of 3.7 miles annually. Domestic load factors are expected to increase from 69.7 percent in 2001 to 73.2 percent in 2013.

International Air Carrier Passenger Traffic

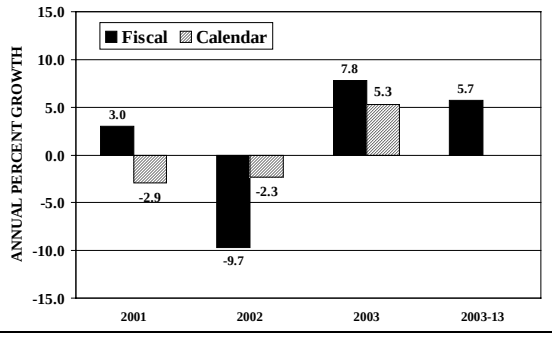
Forecasts of total passenger traffic (sum of U.S. and foreign flag carriers) are provided for travel between the United States and three world travel areas--Atlantic, Latin America (including Mexico and the Caribbean), and Asia/Pacific--as well as for U.S./Canadian transborder traffic. These forecasts are based on historical passenger statistics obtained from the United States Immigration and Naturalization Services (INS) and Transport Canada and on regional world historical data and economic projections obtained from DRI-WEFA.

Total passenger traffic between the United States and the rest of the world is estimated at 131.0 million in CY 2001, a decline of 6.9 percent from 2000 passenger levels. Passenger traffic is expected to increase by 0.2 percent in 2002 and by 6.8 in 2003 as the U.S. and world economies recover strongly from the 2001-02 economic recession. The downturn in passenger traffic in the 2001-02 time period is expected to be deepest in the Canadian transborder and Pacific markets, with passengers down 12.8 and 9.9 percent, respectively, over the 2-year period. Passengers traveling to/from Atlantic and Latin American destinations are forecast to decline by 9.6 and 2.9 percent, respectively, in 2001. However, passenger volumes are expected to be positive in both of these markets in 2002—up 3.6 percent in Latin American markets and up 1.3 percent in Atlantic markets.

Growth in passengers is expected to average 4.9 percent over the remaining 10 years of the forecast period, reaching a total of 225.7 million passengers in 2013. Over the entire forecast period, demand is expected to be strongest in Latin American markets, growing at an annual rate of 5.7 percent. Passenger traffic is projected to grow 4.9 percent annually in Pacific markets, 4.0 percent annually in Atlantic markets, and 3.3 percent a year in Canadian transborder markets.

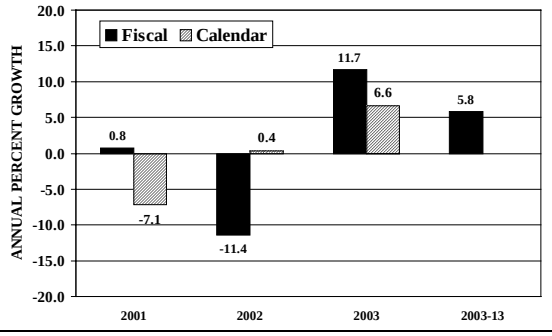
In the aftermath of the September 11th terrorist attack, U.S. air carriers, over a period of several weeks, reduced international capacity by approximately 17 percent. Capacity is expected to return to the pre-September 11th levels in 2004. International capacity is forecast to decline by 9.7 percent in 2002, then increase by 7.8 percent in 2003 and 6.5 percent in 2004. Thereafter, capacity growth begins to exhibit more normal levels, increasing at average annual rates of 5.6 percent over the last 9 years of the forecast period. Capacity cuts are forecast to be deepest in Pacific (down 15.2 percent) and Atlantic (down 9.9 percent) markets. Capacity to Latin American destinations is expected to decline by 2.9 percent in 2002.

U.S. AIR CARRIER INTERNATIONAL ASMS
2001 - 2013



International RPMs and enplanements are forecast to decline by 11.4 and 9.1 percent, respectively, in 2002, then grow by 11.7 and 10.3 percent, respectively, in 2003. U.S. carriers are expected to return to normal growth trends beginning in 2004, with RPMs and enplanements averaging 5.8 and 5.6 percent growth, respectively, over the remainder of the forecast period. The downturn in traffic in 2002 is expected to be most severe in the Pacific and Atlantic markets, with RPMs down 17.2 and 9.9 percent, respectively. Latin American RPMs are forecast to decline by 5.5 percent in 2003.

U.S. AIR CARRIER INTERNATIONAL RPMS
2001 - 2013



The forecasts of international demand assume that U.S. air carriers will benefit from the strong economic recovery expected to take place in late 2002 in both the United States and world markets. International air carrier RPMs and passenger enplanements are both forecast to increase at average annual rates of 4.7 percent over the 12-year forecast period. The stronger growth in international travel relative to domestic markets is being driven by the strong passenger demand projected in the Latin American markets—up 7.0 percent in RPMs and 5.8 percent in passengers.

International load factors are forecast to decline 3.0 percentage points between 2000 and 2002 (from 76.0 to 73.0 percent) but are expected to increase to 75.6 percent in 2003. International load factors then gradually increase to 76.6 percent in 2006 and remain at this approximate level throughout the remainder of the forecast period.

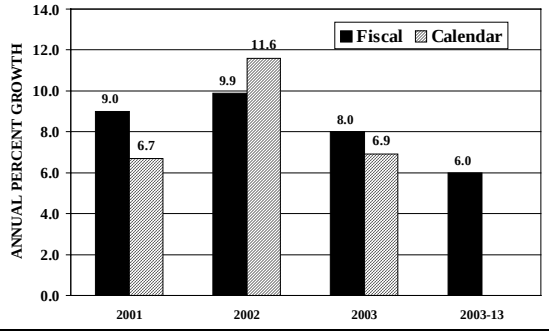
International passenger yields are expected to decline 5.0 percent in 2002 and then increase by 4.2 percent in 2003. The increase in 2003 is due to expanding U.S. and world economic activity and the expected return of the higher fare business traveler. Yields are expected to increase at an average annual rate of 1.9 percent (down 0.5 percent in real terms) over the final 10 years of the forecast period. The decline in real yields is based on the assumption that competitive pressures will continue to exert pressure on carriers to hold the line on fare increases. In international markets, this will take the form of expanded open sky agreements and new and existing global alliances.

Regionals/Commuters
Passenger Traffic

It appears that many regionals/commuters were able to maintain their pre-September 11th flight schedules and, in some instances, have increased their schedules in response to the transfer of additional routes from their larger code-share partners. Based on schedules contained in the Official Airline Guide and projected additions to the fleet, regional/ commuter capacity is estimated to increase by

9.9 percent in 2002 and by 8.0 percent in 2003. Much of the capacity growth forecast in 2002 occurs during the latter half of the year (up 14.6 percent) and reflects not only growth over depressed September 2001 levels but also over reduced capacity levels owing to the lengthy Comair strike in 2001. Over the 12-year forecast period, regional/commuter capacity is expected to increase at an average annual rate of 6.5 percent.

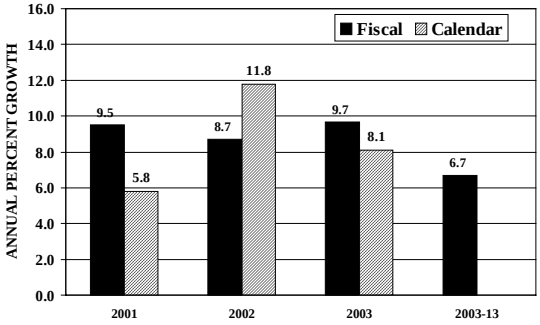
U.S. REGIONAL/COMMUTER ASMS
2001 - 2013



Regional/commuter airlines RPMs are expected to increase by 7.1 percent annually over the 12-year forecast period. Traffic is projected to increase by 8.7 percent in 2002 and 9.7 percent in 2003, then increase at an average annual rate of 6.7 percent over the last 10 years of the forecast period. Again, the growth in 2002 is distorted somewhat by the Comair strike in 2001.

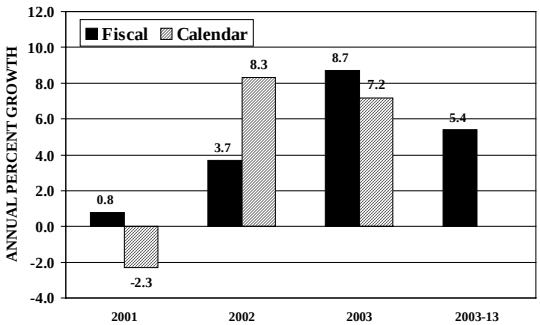
Regional/commuter load factors decline slightly in 2002 (from 58.6 to 57.9 percent then increase to 58.8 percent in 2003. Thereafter, load factors increase gradually over the remainder of the forecast period, reaching 63.0 percent in 2013.

U.S. REGIONAL/COMMUTER RPMS
2001 - 2013



Passenger growth is expected to be somewhat less than that for RPMs, growing by only 3.7 percent in 2002 and 8.7 percent in 2003. Over the 12-year forecast period, regional/commuter passengers are expected to increase at an average annual rate of 5.5 percent, from 79.7 million in 2001 to 151.5 million in 2013. In 2013, regionals/commuters are expected to transport 16.6 percent of all passengers in scheduled domestic air service, up from 12.7 percent in 2001.

U.S. REGIONAL/COMMUTER PASSENGERS
2001 - 2013



Regional/commuter aircraft operations at FAA air traffic facilities are forecast to increase by only 1.0 percent in 2002 and by 4.1 percent in 2003. Thereafter, regional/commuter operations are forecast to grow at an average annual rate of 2.5 percent over the remaining 10 years of the forecast period. The slower growth in activity at FAA air traffic facilities relative to ASMs (2.5

versus 6.5 percent) and passengers relative to and RPMs (5.5 versus 7.1 percent) is largely the result of relatively large increases in the average passenger trip length.

Over the 12-year forecast, the average passenger trip length is forecast to increase from 301.3 miles in 2001 to 361.6 miles in 2013. However, much of the growth occurs in 2002 (up 14.7 miles) and is the result of the transfer of large numbers of routes from their larger code-share partners[10] in the aftermath of the September 11th terrorist attacks. Thereafter, the passenger trip length increases by 4.1 miles annually over the remainder of the forecast period. Much of the growth in trip length after 2002 is due to the continued integration of large numbers of regional jets (2,198 over the 12-year forecast period) into the regional/commuter fleets.

The greater use of regional jets results in the average seating capacity of the regional fleet increasing from 39.9 seats in 2001 to 48.4 seats in 2013.

Air Cargo

Air cargo traffic on U.S. commercial air carriers is expected to grow at annual rates similar to those forecast for passenger traffic. System RTMs are forecast to grow at an annual rate of 4.4 percent (compared to 3.9 percent for system RPMs) over the 12-year forecast period, with domestic RTMs increasing 3.4 percent (versus 3.2 percent) and international RTMs increasing 5.3 percent (versus 4.7 percent).

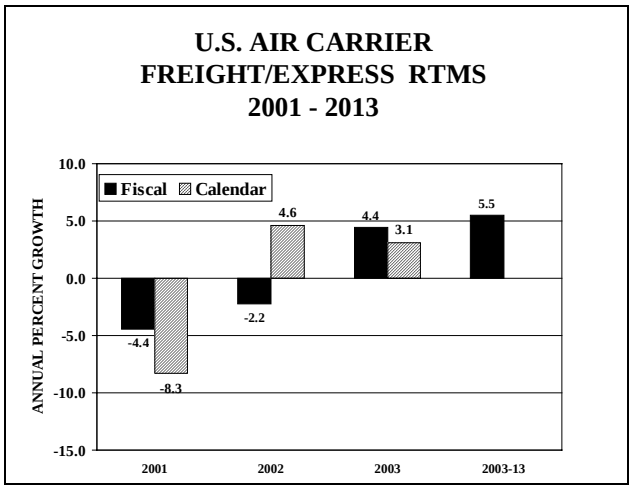
Cargo freight/express RTMs are forecast to decline by 2.2 percent in 2002 and then expand by 4.4 percent in 2003. Thereafter, growth averages 5.5 percent over the final 10 years of the forecast period. The strong recovery in the global economy and expected resumption of growth in information technology equipment is expected to stimulate the demand for the rapid movement of goods and products by air, both in domestic and international markets.

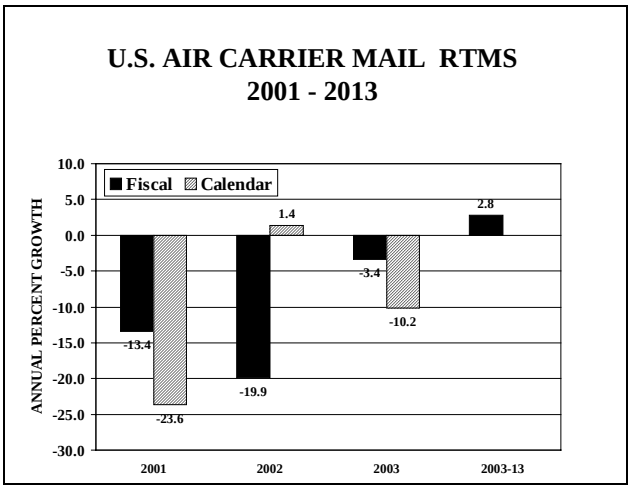
Domestic freight/express RTMs are forecast to decline by 2.1 percent in 2002 as a result of continued weakness in the economy and acceleration in the modal shift from air to ground due to increased air transportation costs to meet new FAA security restrictions. Domestic freight/ express RTMs are forecast to increase 3.0 percent in 2003 based on a continuation of the modal shift and economic recovery. Growth in domestic freight/express is expected to average 4.6 percent annually over the 2004-13 period.

International freight/express RTMs are also projected to decline in 2002 (down 2.3 percent) due to weakness in the world economy and reduced schedules for passenger carriers. Based on projected world GDP, international freight/express is expected to recovery strongly, growing by 5.5 percent in 2003 and 7.1 percent in 2004. Thereafter, growth averages 6.1 percent over the remaining 9 years of the forecast period.

All-cargo carriers are expected to account for 66.6 percent of freight/express RTMs in 2013 (up from 65.2 percent in 2001)—83.0 percent of domestic RTMs and 55.0 percent of international RTMs. The increase in all-cargo share will result from the new security restrictions for transporting cargo on passenger aircraft and from increased demand for expedited service.

[10] Back Aviation Solutions compared OAG schedules in January 2001 and 2002 and found 109 nonstop markets that had previously been operated solely by six majors in January 2001 were being flown solely by these carriers' regional partners in January 2002. (*Aviation Daily*, January 7, 2002)





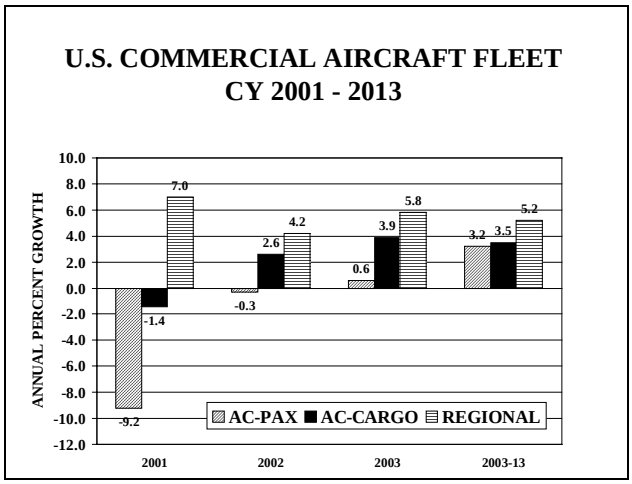
Significantly slower growth is forecast for mail RTMs due to new security restrictions on the transport of mail on passenger aircraft and a continued modal shift from air to ground by the U.S. Postal Service. In addition, it appears that the "anthrax scare" will accelerate the move to electronic alternatives (fax, email, direct bill payment, etc.) and significantly cut into the volume of mail moved by air. Domestic mail RTMs are projected to decline by 23.8 percent in 2002 and an additional 5.0 percent in 2003. This is on top of the 15.2 percent decline in 2001. Domestic mail RTMs are expected to resume growth in 2004, increasing at an average annual rate of 2.7 percent over the remainder of the forecast period. However, it should be noted that domestic mail RTMs do not return to 2001 levels during the entire 12-year forecast period.

International mail RTMs are predicted to decline by 3.3 percent in 2002 then grow by 2.0 percent in 2003. Over the 12-year forecast period, international mail is expected to grow at an average annual rate of 2.5 percent based on projected world GDP.

All-cargo carriers are expected to account for 28.7 percent of mail RTMs in 2013, up from 20.4 percent in 2001. All-cargo carriers' share of domestic mail increases from 24.0 percent in 2001 to 37.0 percent in 2002. This is due to the increased use of these carriers by the U.S. Postal Service as a means to improve delivery and to meet the new FAA security directive. All-cargo carriers' share of international mail increases from 5.2 percent in 2001 to 10.0 percent by 2004 due to increased use of the U.S. Postal Service as a means to provide time-sensitive delivery of mail.

Commercial Aircraft

The number of commercial aircraft is forecast to grow from 7,535 in 2001 to 11,622 in 2013, an average annual increase of 3.7 percent. Most of the growth occurs over the last 10 years of the forecast, with the fleet expected to grow only 1.5 percent in 2002 and 2.8 percent in 2003.



In the aftermath of the terrorist attacks of September 11th, many of the larger air carriers grounded large number of their older less efficient aircraft and deferred delivery of new aircraft scheduled for delivery in 2002 and 2003. As such, the number of large passenger jets (over 70 seats) is forecast to decline by 13 aircraft (down 0.3 percent) in 2002 and increase by only 24 aircraft (up 0.6 percent) in 2003. Over the 12-year forecast period, the number of large passenger jet aircraft increase from 4,069 in 2001 to 5,606 in 2013, an average increase of 2.7 percent (128 aircraft) annually. The narrowbody fleet is forecast to grow by 107 aircraft annually, the widebody fleet by 21 aircraft a year.

The regional/commuter passenger fleet is forecast to increase at an average annual rate of 5.2 percent over the forecast period, from 2,427 in 2001 to 4,457 aircraft in 2013. The number of regional jets (up to 70 seats) in regional/ commuter service is projected to grow from 696 in 2001 to 2,894 in 2013, an average annual increase of 12.6 percent. However, the turboprop fleet is expected to decline from 1,731 in 2001 to 1,563 in 2013. Turboprop aircraft are expected to account for only 35.1 percent of the regional fleet in 2013, down from a 71.3 percent share in 2001.

Cargo large jet aircraft are forecast to increase from 1,039 in 2001 to 1559 in 2013, an average increase of 3.4 percent (43 aircraft) a year. The narrowbody jet fleet is projected to decline by a total of 39 aircraft over the 12-year forecast period. The widebody jet fleet is projected to increase by 46 aircraft annually.

General Aviation

The general aviation industry was particularly negatively impacted by the events of September 11th. Thousands of general aviation aircraft were grounded for weeks due to FAA "no-fly zone" restrictions imposed on the operation of aircraft in particularly security sensitive areas around the country, effectively closing much of the airspace to VFR traffic. Many flight schools curtailed pilot training as new restrictions were imposed on the training of pilots from foreign countries. Even 3 months later, some U.S. airports in and around Washington, DC and New York City remain closed to VFR traffic.[11] These new security restrictions have taken their toll on the general aviation community.

The question is how general aviation, especially pleasure/sport flying, will deal with the double impact caused by restrictions on flying and the current U.S. economic recession. In addition, there remain many uncertainties regarding the future of pilot training. However, the business/ corporate side of general aviation appears well situated to benefit from the stringent security restrictions imposed on flying by commercial aircraft. Safety concerns for corporate staff, combined with increased check-in and security clearance times at many U.S. airports appear to have increased the interest in fractional or corporate aircraft ownership as well as in on-demand charter flights.

[11] On December 19, the FAA announced that it had eased restrictions on the airspace available to private aircraft, but are keeping a protective "no-fly" zone around Washington National Airport.

The current forecast assumes that business use of general aviation aircraft will expand much more rapidly than personal/sport use. This is due largely to the expected continued rapid growth in fractional ownership and is reflected in the changing composition of the general aviation fleet mix.

The active general aviation fleet is projected to increase at an average annual rate of only 0.3 percent over the 12-year forecast period, growing from 216,150 to 225,260 aircraft in 2013. The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow at an average annual rate of 1.8 percent over the 12-year forecast period. However, the jet fleet is responsible for most of this growth. The number of jet aircraft is projected to increase from 7,150 in 2001 to 10,850 in 2013, an average annual increase of 3.5 percent.

The number of piston powered aircraft (including rotorcraft) are projected to increase from 171,700 in 2001 to 175,640 in 2013, an average increase of only 0.2 percent annually. This slow growth is due, in large part, to declining numbers during the 2002-2004 time period as pleasure/sport flying recovers from the impact of high avgas prices, the U.S. economic recession, and the aftermath of the terrorist attacks. After 2004, the piston fleet is forecast to increase at an average annual rate of 0.4 percent.

The number of general aviation hours flown is projected to decline by 2.2 percent in 2002 and increase by only 0.4 percent in 2003, largely the result of declining U.S. economic activity and the lingering effects of the terrorist attacks. However, hours flown are expected to increase at an average annual rate of 1.5 percent during the last 10 years of the forecast period. Much of the increase over this latter period reflects increased flying by business/corporate aircraft and increases in the utilization of other general aviation aircraft.

The hours flown by turbine aircraft (including rotorcraft) increase at an average annual rate of 2.2 percent over the forecast period, compared to only 0.7 percent for piston powered aircraft. Jet aircraft account for the majority of the increase, expanding at an average annual rate of 4.1 percent. The large increases in jet hours are due to the expected increases in both the fractional ownership fleet and its activity levels. Utilization of fractional ownership aircraft average approximately 900 hours annually compared to only 380 hours for all business jets.

The number of active general aviation pilots (excluding air transport pilots) are projected to total 556,715 in 2013, an increase of almost 54,000 (up 0.8 percent annually) over the forecast period. Most of the expected growth is projected to occur in the private and commercial categories, reflecting the expected increase in the demand for pilots among fractional ownership companies and business corporations. The number of private pilots are projected to increase by almost 30,000 (up 0.9 percent annually), totaling 291,000 in 2013. Commercial pilots are forecast to increase from 137,636 in 2001 to 158,100 in 2013, an average annual increase of 1.2 percent.

The disturbing news for general aviation is that the number of student pilots is projected to decline by 4.5 percent in 2002 and an additional 1.2 percent in 2003. These declines reflect the uncertainties surrounding the restrictions imposed on flight school and pilot training. It has been estimated that as many as 20 percent of student pilots are foreign nationals and are now subject to increased scrutiny and lengthy background checks. Losses of this magnitude could result in the closure of many flight schools.

Despite these concerns, the number of student pilots are assumed to increase at an average annual rate of 1.0 percent after 2004. However, the projected number of student pilots in 2013 (90,000) is less than the number recorded in 2000 (93,064).

FAA Workload Forecasts

There were a total of 472 towered airports at the end of September, 266 FAA towers and 206 contract towers. While the number of FAA towers will remain constant at 266 in 2002, the number of FAA contract towered airports is expected to increase by 24 to 230. In 2001, it is estimated that total aircraft activity at these 24 airports totaled 2.1 million operations, with general aviation accounting for the vast majority of the activity—1.8 million operations or 87.1 percent of total activity at the 24 airports. Additions of this magnitude will skew the growth rates at FAA combined towers in 2002 and 2003.

Since 1993, a total of 179 FAA towers have assumed contract tower status. To overcome reporting inconsistencies caused by the tower conversion program, the FAA has, since 1996, developed separate activity forecasts for both FAA and contract towered airports. Activity at FAA Air Route Traffic Control Centers and Flight Service Stations are not affected by the contract tower conversions.

Summary forecasts of aircraft activity at combined FAA and contract tower facilities can be found in web Table I-6. Summary forecasts of activity at FAA facilities only, including FAA towers, en route centers, and flight service stations, can be found in web Table I-7. More detailed forecasts and discussion of aircraft activity at FAA and contract facilities can be found in Chapter VII of the hard-copy version of the forecast document. and in web Tables 32 through 49..

FAA and Contract Towers

Activity at the combined FAA and contract towers totaled 66.2 million operations in 2001. Activity is expected to decline by 2.6 percent in 2002, largely the result of the large schedule reductions taken by the larger air carriers and the restrictions imposed on the operation of many general aviation aircraft. Activity is expected to rebound sharply in 2003, increasing by 7.1 percent. Without the addition of the 24 new contract towers, combined activity would decline by 4.1 percent in 2002 and increase by 4.1 percent in 2003. Activity at combined FAA/contract towers is expected to increase at an average annual rate of 1.7 percent over the remaining 10 years of the forecast period, reaching 81.7 million operations in 2013. A large part of the growth after 2003 is the result of increased commercial aircraft activity (up 2.5 percent annually).

General aviation activity is forecast to decline by 1.0 percent in 2002, then increase by 7.8 percent in 2003. Thereafter, general aviation activity increases at an average annual rate of 1.2 percent over the remainder of the forecast period, reaching 45.5 million operations in 2013. Without the addition of the 24 new contract towers, general aviation activity would decline by 3.2 percent in 2002 and increase by 3.4 percent in 2003.

Military activity increases during both 2002 and 2003, due in part to added fights for security surveillance as well as from added activity at the 24 new contract towers. Military activity is then held constant at the 2003 activity level throughout the remainder of the forecast period.

Combined instrument operations counts at FAA and contract towered airports decline by 4.2 percent in 2002, then increase by 4.6 percent in 2003. Thereafter, instrument operations increase at an average annual rate of 2.0 percent over the remainder of the forecast period, totaling 62.1 million operations in 2013. Commercial aircraft instrument operations are forecast to increase at a significantly faster rate than are general aviation instrument operations, up 2.5 and 1.4 percent, respectively, over the last 10 years of the forecast period. Military activity is expected to grow by 2.0 percent in

2002, then remain constant at that level of activity through 2013.

En Route Centers

The workload at FAA en route traffic control centers is forecast to decline by 4.4 percent in 2002, due entirely to a 10.8 percent decline in air carrier activity. Commuter/air taxi and general aviation activity increases 6.5 and 1.0 percent, respectively in 2002. The positive numbers for these two user groups are in response to increased for-hire charter operations as well as to more IFR flying as a result of the restrictions placed on VFR flights.

Center activity is expected to grow by 5.0 percent in 2003 and then increase by 2.2 percent annually over the last 10 years of the forecast period. A total of 56.6 million IFR aircraft are expected to be handled by the 22 FAA en route centers in 2013, compared to 45.2 million in 2001.

The number of commercial aircraft handled is projected to increase 2.6 percent annually while the number of general aviation aircraft handled increases 1.7 percent a year over the last 10 years of the forecast period. Military activity is forecast to increase by 2.0 percent in 2002, then hold constant at this activity level for the remainder of the forecast period.

The higher growth rate at FAA en route centers, relative to activity at combined towered airports, reflects the fact that commercial activity accounts for a significantly larger percentage of center activity—73.5 versus 38.8 percent at towered airports in 2001. Therefore, the projected larger increases in commercial aircraft activity have a much greater impact on total center traffic during the forecast period.

Flight Service Stations

Total flight services originating at traditional FAA flight service stations (non-automated) are forecast to increase from 29.0 million in 2001 to 30.2 million in 2013, an average annual rate of growth of 0.3 percent. However, all of the growth is expected to occur in 2002 (up 7.7 percent) and appears, at this time, to be the result of the restrictions placed on VFR flying in the aftermath of the September 11th terrorist attacks.

During the first 3 months of FY 2002 (October-December), IFR and VFR flight plans were up 18.3 and 11.5 percent, respectively, over the same 3 months in FY 2001. In addition, pilot briefings were up 8.3 percent over the same time period. However, based on historical flight service station trends, it has been assumed that these relatively large growth rates are a short-term phenomenon and that growth at flight service stations will resume normal growth trends starting in 2003. As such, total services provided at flight service stations are projected to decline at an average annual rate of 0.3 percent over the final 11 years of the forecast period

Of the services provided by the FAA, only flight plans originated is projected to increase over the 12-year forecast period, growing from 5.6 million in 2001 to 6.6 million in 2013. Both pilot briefings and the number of aircraft contacted are forecast to decline over the next 12 years, down 0.7 and 1.5 percent annually.

The number of DUATS services are projected to grow at an average annual rate of 2.1 percent over the forecast period, from 16.2 million in 2001 to 20.8 million in 2013. Combined FSS and DUATS services are expected to total 51.0 million in 2013, an annual increase of 1.0 percent.

FORECAST RISKS

The risks inherent in this year's forecasts are numerous and largely on the negative side. The aviation industry finds itself in uncharted waters where nothing that has gone before has prepared anyone to predict with any certainty what the future has in store for aviation. Prominent in everyone's predictions of future aviation demand is the assumption that there will be no more terrorist attacks aimed at U.S. aviation. Yet aviation, because of its high visibility and global reach, has been and will continue to be a target for international terrorism. We assume that the highest levels of security and continuous vigilance will protect the flying public from future acts of terrorism. Aviation cannot expect to return to normalcy until the flying public's confidence in the integrity of our aviation security systems has been fully restored.

The forecasts prepared by the FAA have assumed, as have many other industry forecasters, that aviation demand will follow a similar path to recovery as noted in previous terrorist or war related incidents, i.e., Pan American's flight 103 in December 1988 and Iraq's invasion of Kuwait in August 1990. In each instance, traffic and revenue growth resumed within a year. However, there are significant differences with the terrorist attacks of September 11th and, as such, presents a major risk to achieving the forecasts discussed herein.

Previous terrorist incidents have generally been singular or isolated in nature and directed against aircraft in international flight or on foreign soil. The impact from previous attacks, though sizable in terms of decreased demand, has generally been regional or route specific in nature. In addition, the overall impact was relatively short in duration, generally lasting less than one year. The difference is that for the first time, terrorists used aircraft as weapons of mass destruction against civilian targets in two of the most important and recognizable cities in the free world. In addition, the capturing of the September 11th terrorist attacks on video and their incessant replay on national and world television has created images among the world populace that will not be soon forgotten. And herein lies the major difference between previous terrorist attacks and the events of September 11th. The impact to aviation has not been confined to a single market or region; it has affected traffic worldwide. The widely held view appears to be that if terrorists could carry out such attacks on American soil, then no one anywhere is immune to terrorist attacks. And the impact on aviation has been devastating, both in the U.S. and worldwide.

Following previous terrorist attacks, airlines generally continued to operate the same or slightly reduced schedules. This time, U.S. airlines immediately cut capacity by almost 20 percent. Foreign flag carriers also adjusted schedules to meet drastically reduced passenger demand. Additional restrictions and "no-fly zones" were implemented on the operation of aircraft within the United States, affecting both civilian and commercial aircraft. Heightened security measures and procedures were implemented at U.S. airports, doubling or tripling the time required for check-in and security clearance. All of these actions will have an impact on future aviation activity.

The forecasts also assume that the long-term relationships inherent in the models used to predict aviation demand have not changed. But what if the traveling public's propensity to fly has changed? What effects will the increased times required for check-in and security checks have on future travel plans, in particular, those trips of less than 300 miles in distance? If the long-term growth in demand is less than the current forecasts predict, what does this portend for the financial viability of individual carriers and the aviation industry in general?

Inherent in the current forecasts is the assumption that the commercial aviation industry returns to profitability in 2003. A large part of the profitability equation is based on the

assumption that the mix of full-fare business traffic relative to personal travel recovers to previous profitable levels. Concerns for the safety of corporate employees has already led some companies to switch to fractional ownership, corporate aircraft, or on-demand charter flights. Even before September 11th, United Airlines had established a separate entity—Avolar--to cater to on-demand business travel utilizing smaller business/corporate aircraft. With 309 aircraft on firm order or option, Avolar plans to be open for business in 2002. The U.S. airline financial crisis in 2001 started as a result of the change in the passenger mix from business to personal. What if business demand does not return or only partially returns to 2001 levels?

There are some positive signs that point toward a strong recovery in both the commercial and general aviation industries. Chief among them is the projected strong recovery and growth in both the U.S. and worldwide economies and declining real fuel prices throughout the forecast period. However, all economic forecasts contain a number of uncertainties that could cause projected growth to be less than that projected. DRI-WEFA has assumed a probability of 30.0 percent that the recession will be longer and the recovery longer than predicted. A 15.0 percent probability is assumed for its higher growth scenario.

The economic forecasts used to develop this year's aviation forecasts assume a very strong "V shaped" recovery starting in late 2002. OMB's U.S. GDP forecast assumes seasonally adjusted annual quarterly growth of 3.9 percent for 5 consecutive quarters starting with the 4th quarter in FY 2002. What if the U.S. economic rebound takes on the properties of a "W shaped" or "U shaped" recovery? Slower economic growth would not only slow the recovery in the demand for aviation services but would also slow the industry's return to profitability.

Internationally, the Japanese economy, currently in recession, continues to send mixed signals and a prolonged recession or slow growth could negatively impact the entire region. Argentina's current financial and political crises, already plagued by debt defaults and currency devaluation, could worsen and spread to other regional economies. Additionally, if the economic recovery in the U.S. is less than forecast, this could also negatively impact those Asian and Latin American countries whose economies are dependent on export trade with the United States. The current forecasts assume strong passenger growth for travel between the United States and these regions. Any slowing of demand could seriously inhibit the growth in passenger demand for these two travel areas.

The political climate regarding proposed mergers and alliances changed dramatically on September 11th. The commercial industry's current financial condition, combined with what appears to be a more favorable climate for consolidation, could witness a spate of proposed mergers and/or alliances over the next several years. While consolidation may improve the financial health of individual carriers and the industry, the fear is that consolidation would lessen competition in many markets. Less competition could mean higher fares to the flying public and lower travel demand.

As feared, a tenuous general aviation industry recovery was vulnerable to the economic slowdown and recession, although not as vulnerable as it would have been several years ago. How quickly the industry can recover from both the economic recession and the aftermath of the events of September 11th is open to conjecture. The business/corporate side of the industry appears to be in much better position to take advantage of the projected economic rebound than does pleasure/sport flying. Security concerns arising out of the events of September 11th could significantly increase the demand for corporate jets and fractional and on-demand charter services. This segment of the industry could greatly exceed our forecasts.

On the other side, the January 6 incident involving the flight of a light aircraft into a Tampa building could lead to additional restrictions on the operation of light general aviation aircraft and pilot training. This has the potential to seriously constrain growth in personal flying for years to come. Regardless of any new restrictions, how quickly this flying segment responds to the economic rebound will go a long way in determining whether our predicted increases in the demand for general aviation products and services are achieved.

Increased flight delays, which had become a major problem for the airlines, the traveling public, and the FAA, ceased to be a major problem on September 11th. Although the current forecasts do not have commercial activity (the sum of air carrier and regionals/commuters) returning to pre-September levels until 2004, delays will become a critical limiting factor to growth within this forecasting period. How Government and industry planners use the next several years to develop comprehensive plans to head off the inevitable future delays will be critical to fulfilling this forecast.

If the economic scenarios presented in this document—a strong recovery and sustained moderate growth for both the U.S. and world economies--are achieved, there is every reason to believe that the demand for commercial and general aviation products and services will, after 2002, continue to expand throughout the forecast period.

FORECAST SUMMARY

Highlights of the current FAA aviation forecasts for the 2002 to 2013 time period include:

- The U.S. and world economies recover strongly from the current recession in late 2002 and 2003 and achieve moderate sustained growth throughout the remainder of the forecast period, with the U.S. expected to grow slightly less than that of worldwide economic activity (3.0 versus 3.3 percent annually). Most of world economic growth is expected to take place in the Asia/Pacific (4.1 percent annually) and Latin American (3.9 percent annually) regions.

- Commercial and general aviation demand plummet in 2002, with U.S. air carrier passengers down 13.0 percent and general aviation hours flown down 2.2 percent.

- U.S. carrier domestic and international passenger traffic recovers strongly in 2003 (up 14.4 percent), with international markets forecast to grow significantly faster than domestic markets (5.6 versus 3.8 percent annually) over the last 10 years of the forecast period. Most of the growth in international travel over this 10-year period is expected to occur in Latin American and Pacific markets, up 6.7 and 5.6 percent, respectively.

- Regional/commuter passenger traffic (up 8.7 percent in 2003) will continue to grow at a faster rate than their larger domestic counterparts (5.5 versus 3.8 percent annually) over 2004-2103 time period. Stronger growth results from the establishment of new markets utilizing the new regional jets and from further route rationalization by their larger code-share partners.

- Air cargo traffic (up 3.8 percent in 2003) is expected to grow at rates similar to those predicted for passenger traffic, with domestic and international RTMs increasing at annual rates of 4.4 and 6.1 percent, respectively, over the final 10 years of the forecast period.

- After 2004, general aviation is expected to achieve low to moderate increases in the active fleet (0.5 percent annually) and hours flown (1.5 percent annually), with most of the growth occurring in business/corporate flying.

- Combined aviation activity at FAA and contract facilities (up 6.9 percent in 2003) is expected to grow at annual rates of 1.7 percent annually after 2004, with commercial activity (up 2.5 percent annually) increasing at significant higher rates than those predicted for general aviation (1.3 percent annually).

The major uncertainties that have the potential to impact the demand for U.S. and international aviation services include:

- The economic forecasts used to develop this year's aviation forecasts assume a 2-quarter recession with a very strong recovery starting in late 2002. Should the recession be longer and deeper and the recovery weaker, it could push out the recovery in travel demand for an additional year. DRI-WEFA assigns a probability of 30 percent that the recession will be deeper and longer than predicted.

- One of the major assumptions regarding the recovery of the commercial aviation sector, both in terms of traffic and profitability, is a return of the full-fare business traveler to the levels achieved prior to the start of the current economic recession. The return of business travel is directly dependent on the recovery and strength of future U.S. and world economic activity.

- The current forecast projects a rapid decline in fuel prices in 2002, with only moderate increases forecast over the remainder of the forecast period. If U.S. and world economic activity grows as predicted, energy prices could be considerably higher than forecast. Should this occur, the potential impact on U.S. and world economic growth and air travel could be considerable.

- The strong economic recovery forecast in Asia/Pacific and Latin American countries appears to be overly optimistic. The economy of Japan continues to send mixed signals and Argentina's economy is in dire straits. If the internal economic problems plaguing their economies are not resolved, the potential for recessions to spread to other Asia and South America countries remains a very distinct possibility. This could significantly slow the traffic recovery forecast in these regions.

- Heightened security measures at U.S. airports have significantly increased the times required for check-in and security clearance. If these lengthy check-in times are allowed to continue, much of the short-distance scheduled air travel could be shifted to other transportation modes or travel alternatives such as teleconferences. The loss of this traffic, mostly high price business travel, would be devastating to the profitability of U.S. commercial airlines.

Nevertheless, air transportation is expected to continue to dominate all other transportation modes in both long distance domestic inter-city travel and in international passenger markets throughout the foreseeable future.